



Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 8628 (1987): G Salt, Technical [PCD 9: Organic Chemicals Alcohols and Allied Products and Dye Intermediates]

“ज्ञान से एक नये भारत का निर्माण”

Satyanaaranay Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartṛhari—Nītiśatakam

“Knowledge is such a treasure which cannot be stolen”



BLANK PAGE



PROTECTED BY COPYRIGHT

IS : 8628 • 1987

Indian Standard
SPECIFICATION FOR
G SALT, TECHNICAL
(First Revision)

UDC 667.281 : 547.655.2

© Copyright 1987

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard
**SPECIFICATION FOR
G SALT, TECHNICAL**
(First Revision)

Dye Intermediates Sectional Committee, PCDC 11

Chairman

SHRI V. K. MENON

Representing

Amar Dye-Chem Ltd, Bombay

Members

DR K. APARAJITHAN	Atic Industries Ltd, Bulsar
SHRI A. M. KAPADIA (<i>Alternate</i>)	National Chemical Laboratory, Pune
DR N. R. AYYANGAR	Ajanta Chemical Industries, New Delhi
SHRI S. D. BHARDWAJ	
SHRI KAPIL DEV (<i>Alternate</i>)	
DR BAKUL PATEL	Dyestuffs Manufacturer's Association, Bombay
SHRI G. C. DESAI	Indian Chemical Manufacturers Association, Calcutta
SHRI M. V. DESAI	Atul Products Ltd, Atul
DR J. M. TUREL (<i>Alternate</i>)	
DR Y. B. DESAI	Universal Dyestuff Industries Ltd, Vadodara
SHRI N. V. HEDDURSHETTI	Indian Dyestuff Industries Ltd, Bombay
DR V. P. KURBA (<i>Alternate</i>)	
SHRI A. K. MANDAL	Directorate General of Technical Development, New Delhi
SHRI R. D. KAWATRA (<i>Alternate</i>)	
SHRI D. G. PATWARDHAN	Development Commissioner, Small Scale Industries, New Delhi
SHRI D. P. SINGH (<i>Alternate</i>)	
SHRI S. RAJAGOPALAN	Hindustan Ciba-Geigy Ltd, Bombay
SHRI D. K. MURTHY (<i>Alternate</i>)	
SHRI K. L. RATHI	Sudarshan Chemical Industries Ltd, Pune
DR R. SOMAN (<i>Alternate</i>)	
REPRESENTATIVE	Western India Erectors, Pune
DR J. N. SHAH	Sandoz (India) Ltd, Bombay
SHRI K. S. RINDANI (<i>Alternate</i>)	
DR P. V. SUBRAMANIAM	Colour-Chem Ltd, Bombay
SHRI N. R. TALPADE	Hickson & Dadajee Ltd, Bombay
SHRI M. W. SHENDE (<i>Alternate</i>)	

(Continued on page 2)

© Copyright 1987

BUREAU OF INDIAN STANDARDS

This publication is protected under the *Indian Copyright Act (XIV of 1957)* and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(*Continued from page 1*)

Members

SHRI H. K. VENKATARAMAIAH

SHRI M. S. SAXENA,
Director (P & C)

Representing

Hindustan Organic Chemicals Ltd, Rasayani
(Maharashtra)

Director General, BIS (*Ex-officio Member*)

Secretary

SHRI A. KAR
Joint Director (P & C), BIS

Sulphonic Acid Dye Intermediates Subcommittee, PCDC 11 : 2

Convener

DR S. SIDDAN

Colour-Chem Ltd, Bombay

Members

SHRI A. K. CHATTERJEE (*Alternate to*
Dr S. Siddan)

SHRI M. V. DESAI Atul Products Ltd, Atul

Dr J. M. TUREL (*Alternate*)

SHRI J. K. DOSHI Indian Dyestuff Industries Ltd, Vadodara

SHRI N. V. H. SHETTI (*Alternate*)

SHRI ASIT D. JAVERI Sadhna Nitrochem Ltd, Bombay

SHRI A. COUTINHO (*Alternate*)

SHRI M. W. SHENDE Hickson & Dadajee Ltd, Bombay

SHRI K. P. RANE (*Alternate*)

DR R. SOMAN Sudarshan Chemicals Industries Ltd, Pune

SHRI G. P. MALEKAR (*Alternate*)

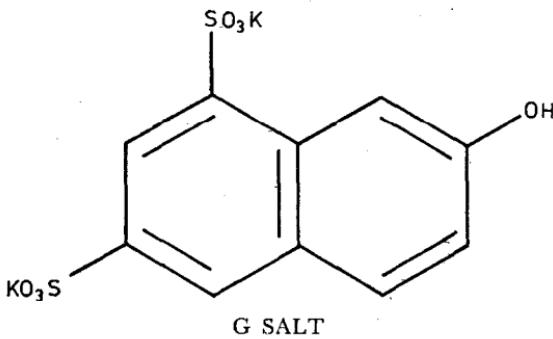
SHRI H. K. VENKATARAMAIAH Hindustan Organic Chemicals Ltd, Rasayani
(Maharashtra)

Indian Standard
**SPECIFICATION FOR
 G SALT, TECHNICAL**
(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 31 March 1987, after the draft finalized by the Dye Intermediates Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

0.2 G Salt ($G_{10}H_6O_7S_2K_2$), chemically described as 2-naphthol-6, 8-disulphonic acid is a dye intermediate. It is available as its dipotassium salt and is represented by the following structural formula:



(Molecular Mass, Free Acid, 304)

0.3 This standard was first published in 1977. It has now been revised in order to update it. In the present version the requirement of assay (on the basis of molecular mass 304), β -naphthol and matter insoluble in sodium hydroxide have been modified. Besides, the requirement of impurities, namely, R salt and Schaeffer's Salt have been stipulated and chromatographic test method for their estimation has been introduced.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Rules for rounding off numerical values (revised).

1. SCOPE

1.1 This standard prescribes the requirements and methods of sampling and test for G salt, technical.

2. REQUIREMENTS

2.1 Description — The material shall be in the form of off-white powder or off-white moist cake.

2.2 The material shall also comply with the requirements given in Table 1.

TABLE 1 REQUIREMENTS FOR G SALT, TECHNICAL

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO CL NO. IN APPENDIX A
(1)	(2)	(3)	(4)
i)	Assay, percent by mass (on dry basis), <i>Min</i>	65	A-2
ii)	Matter insoluble in sodium hydroxide solution, percent by mass, <i>Max</i>	0·2	A-3
iii)	β -naphthol content (on 100 percent basis), percent by mass, <i>Max</i>	0·5	1
iv)	R Salt, percent by mass (on 100 percent basis), <i>Max</i>	1·0	2
v)	Schaeffer's Salt, percent by mass (on 100 percent basis), <i>Max</i>	1·0	3

3. PACKING AND MARKING

3.1 Packing — The material shall be packed in steel drums (see IS : 2552-1979*) lined with suitable polyethylene film or as agreed to between the purchaser and the supplier. Each container shall be securely closed.

3.2 Marking — Each container shall bear legibly and indelibly the following information:

- Name of the material;
- Name of the manufacturer and his recognized trade-mark, if any;
- Batch number; and
- Tare, net and gross mass.

*Specification for steel drums (galvanized and ungalvanized) (*second revision*).

3.2.1 The containers may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

4. SAMPLING

4.1 Representative samples of the material shall be drawn as prescribed in 3 of IS : 5299-1969*.

4.2 Number of Tests

4.2.1 Tests for assay shall be conducted on each of the individual samples.

4.2.2 Test for the determination of remaining characteristics, namely, β -naphthol; R Salt and Schaeffer's Salt content and solubility in sodium hydroxide solution shall be conducted on the composite sample.

4.3 Criteria for Conformity

4.3.1 *For Individual Samples* — The lot shall be declared as conforming to the requirement of assay if each of the individual test results satisfies the relevant requirements given in Table 1.

4.3.2 *For Composite Sample* — For declaring the conformity of the lot to the requirements of all other characteristics tested on the composite sample (*see 4.2.2*), the test results for each of the characteristics shall satisfy the relevant requirements given in Table 1.

5. TEST METHODS

5.1 Tests shall be carried out according to the methods prescribed in Appendix A. Reference to relevant clauses of Appendix A is given in col 4 of Table 1.

5.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see IS : 1070-1977†*) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

*Methods of sampling and test for dye intermediates.

†Specification for water for general laboratory use (*second revision*).

A P P E N D I X A
(*Table 1 and Clause 5.1*)

METHODS OF TEST FOR G SALT, TECHNICAL

A-1. PREPARED SAMPLE

A-1.1 Dry the material at $105 \pm 1^{\circ}\text{C}$ to constant mass. Grind and mix well. Transfer the material immediately to a wide-mouthed bottle and stopper it. Use this *prepared sample* for tests.

A-2. ASSAY

A-2.0 Outline of the Method — The material is distilled in dilute sodium carbonate solution. A known volume of the solution is titrated against standard 4-nitrobenzene diazo solution in alkaline medium and from the consumption diazonium solution, assay is calculated.

A-2.1 Reagents

A-2.1.1 Sodium Carbonate Solution — approximately 10 percent (*m/v*).

A-2.1.2 Phenolphthalein Indicator Paper

A-2.1.3 Standard 4-Nitrobenzene Diazo Solution — 0.1 N.

A-2.1.4 H Acid Indicator Solution — Dissolved 0.5 g of H acid in 100 ml of 1 percent ammonium hydroxide solution.

A-2.2 Procedure — Weigh accurately about 15 g of the *prepared sample* (*see A-1.1*) and transfer to a 500-ml beaker with the help of water. Slowly add sodium carbonate solution to get a positive test on phenolphthalein paper. Transfer the solution quantitatively into a 500-ml volumetric flask and dilute to the mark with water at room temperature. Mix well. Pipette 50 ml aliquot of this solution into a 1-litre beaker. Add 200 ml of ice-cold water. Add 50 ml of sodium carbonate solution. Stir with a mechanical stirrer and cool with washed ice to below 1°C . Titrate with 4-nitrobenzene diazonium solution from a cold water-jacketted burette. Test with H acid for excess of diazo and with the diazo for the coupling component. The end point is noted when there is no test with diazo and a fine visible pink line with H acid indicator is obtained which may persist for 10 minutes without further addition of diazo. Let the titre reading be *V*.

A-2.3 Calculation

A-2.3.1 Assay, percent by mass (on dry basis) = $\frac{V \times N \times 304}{M}$

where

V = volume in ml of the standard 4-nitrobenzene diazonium solution,

N = normality of 4-nitrobenzene diazo solution, and

M = mass (on dry basis) in g of the material taken for the test.

A-3. DETERMINATION OF MATTER INSOLUBLE IN SODIUM HYDROXIDE SOLUTION

A-3.1 Reagent

A-3.1.1 Sodium Hydroxide Solution — Approximately 5 percent (*m/v*), filtered free from suspended impurities.

A-3.2 Procedure — Weigh accurately 10 to 15 g thoroughly mixed sample into a 1000-ml beaker, added 300 ml water and sufficient 5 percent sodium hydroxide solution to make the solution alkaline to brilliant yellow paper. Heat the solution to 60°C until the sample is dissolved and filter it through sintered crucible of porosity G₄, wash residue well with hot water, dry at 100 ± 5°C, cool and weigh.

A-3.3 Calculation

Matter insoluble in sodium hydroxide solution, percent by mass = $\frac{M_1 \times 100}{M_2}$

where

M_1 = mass in g of the residue, and

M_2 = mass in g of the sample taken for the test.

A-4. DETERMINATION OF R SALT, SCHAEFFER'S SALT AND β-NAPHTHOL

A-4.0 Outline of the Method — R Salt, Schaeffer's Salt and β-naphthol are determined by using descending paper chromatographic technique.

A-4.1 Apparatus

A-4.1.1 Developing Chamber

A-4.1.2 Chromatographic Sprayer

A-4.1.3 Micropipette

A-4.1.4 UV Lamp

A-4.2 Reagents

A-4.2.1 R Salt — 0·1 percent solution (on 100 percent basis) in water + 3N ammonia solution (9:1).

A-4.2.2 Schaeffer's Salt — 0·1 percent solution (on 100 percent basis) in water + 3N ammonia solution (9:1).

A-4.2.3 β -Naphthol — 0·05 percent solution (on 100 percent basis) in water + 3N ammonia solution (9:1).

A-4.2.4 Developer — 40 percent aqueous solution of calcium chloride.

A-4.2.5 G Salt — free from G Salt, Schaeffer's Salt and β -naphthol.

A-4.2.6 Spray Reagent — 0·1 percent aqueous solution of diazo fast red β -Salt.

A-4.2.7 Sodium Hydroxide Solution — 2 percent.

A-4.3 Procedure

A-4.3.1 First, prepare a standard solution of G Salt containing known amounts of R Salt, Schaeffer's Salt and β -naphthol. Weigh accurately 1·0 g of G Salt (**A-4.2.5**) into each of the three 100-ml volumetric flasks. Add 8·0 ml, 9·0 ml and 10·0 ml of 0·1 percent solution of R Salt (**A-4.2.1**) in ammonia solution to flask No. 1, 2 and 3 respectively. Dissolve the contents of the flasks in ammonium hydroxide solution. Then make the volume up to the mark with ammonium hydroxide solution. Now, these are three solutions of 0·8, 0·9 and 1·0 percent R Salt content. In the fourth 100-ml flask, weigh about 1·0 g of the *prepared sample* (see **A-1.1**), dissolve in ammonium hydroxide solution and dilute to 100-ml with ammonium hydroxide solution.

A-4.3.1.1 Prepare a similar set of 3 solutions of 0·8, 0·9 and 1·0 percent of Schaeffer's Salt content with the use of 0·1 percent Schaeffer's Salt solution in ammonia (**A-4.2.2**).

A-4.3.1.2 Prepare a similar set of three solutions of 0·4, 0·45 and 0·5 percent of β -naphthol content with use of 0·05 percent β -naphthol solution in ammonia (**A-4.2.3**).

A-4.3.2 Place 10 microlitre spot of each of the three solutions of R Salt, Schaeffer's acid β -naphthol and *prepared sample* solution (**A-4.3.1**) using micropipettes in the same line to a distance of about 4 cm on filter paper (Whatman No. 1 or equivalent). Place the paper in a descending paper chromatographic glass jar containing the developing reagent (**A-4.2.4**) and previously saturated with the same developer. Allow the solvent to run in a descending manner for about 30 cm from the spot. This will take about 7 hours. Take out the paper after 30 cm run, dry the solvent completely and observe under UV light. Spray the paper with spray reagent (**A-4.2.6**) and develop the chromatogram.

The separated spots characteristic of constituents may be identified by their colour as under:

Contents	Zone	Rf Value	Colour	
			Under UV Light	After Spraying
β -Naphthol	I	0.16	—	Pink
Schaeffer's Salt	II	0.33	—	Pink
G Salt	III	0.62	Blue	Pink
R Salt	IV	0.72	Blue	Pink
Unknown	V	0.89	Green	—

A-4.4 Report — Report R Salt, Schaeffer's Salt and β -naphthol as that which is nearest in intensity to the standard. In case the colour intensity does not come in the range of standard spots, repeat the whole procedure using different percentage of R Salt, Schaeffer's Salt and β -naphthol.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pasca ¹	Pa	1 Pa = 1 N/m ²